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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,610	08/07/2001	Georg Rose	DE000116	1411

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EXAMINER

LERNER, MARTIN

ART UNIT PAPER NUMBER

2654

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,610

Applicant(s)

ROSE, GEORG

Examiner

Martin Lerner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 5 and 7 to 9 is/are pending in the application:
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 5 and 7 to 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because they have reference numerals but do not have any descriptive labels. It is conventional for drawings to have both descriptive labels and reference numerals under patent practice in the United States.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office Action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 to 5 and 7 to 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sukkar* in view of *Chao Chang et al.*

Concerning independent claims 1 and 7, *Sukkar* discloses a method and dialogue system for recognizing speech utterances, comprising:

“generating at least one word sequence hypothesis by a speech recognizer from a speech utterance consisting of one or more words” – a recognition component 312 recognizes individual subwords in the input speech; the recognition component 312 emits the selected most-likely word, phrase, or sentence on path 324 as a word/phrase/sentence hypothesis (column 9, lines 59 to 60; column 10, lines 10 to 12: Figure 3);

“comparing the word sequence hypothesis with the entries which represent company names in a database” – the recognition component 312 also has an associated word lexicon database 318 and a grammar database 320; the word lexicon database 318 represents a mapping between strings of subword sounds and vocabulary words, phrases, or sentences; the word lexicon database 318 contains a data structure describing the pronunciation, in terms of subword symbols, of each word in the system’s vocabulary; in conjunction with recognizing a string of subword sounds

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from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, word lexicon database 318 contains a list of company names for a company name recognition task;

“selecting a company name as a recognition result in dependence on the result of the comparison” – in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, recognition component 312 selects a most-likely company name for a company name recognition task.

Concerning independent claims 1 and 7, *Sukkar* discloses a word lexicon database 318 for storing data structures of words to be recognized (column 9, line 59 to column 10, line 19: Figure 3), and a speech recognition application for recognizing company names (column 13, lines 36 to 43), implying that word lexicon database 318 stores company names. *Sukkar* omits only storing entries including “variants of the company names in a database, the variants including at least one of mix-ups of part of

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company names, colloquial formulations of company names, abbreviations of company names, and acronyms of company names". However, *Chao Chang et al.* teaches speech recognition of various subsets of words, where the various subsets of words are sent to a natural language interpreter. Specifically, subsets of words includes variants on a company name "IBM", where variants include "international business machines incorporated" and "international business machines". (Column 6, Line 60 to Column 7, Line 22) Variants for IBM of "international business machines incorporated" and "international business machines" include at least "mix-ups of part of company names". The objective is to process and interpret natural language in a manner that enhances operation through the use of semantic confidence values to enhance efficiency. (Column 1, Lines 20 to 27) It would have been obvious to one having ordinary skill in the art to not take into account certain words in a company name as taught by *Chao Chang et al.* in the speech recognition method and system of *Sukkar* for the purpose of enhancing operation through the use of semantic confidence values to increase efficiency.

Concerning independent claim 8, *Sukkar* discloses a method and dialogue system for recognizing speech utterances, comprising:

"storing entries including company names [and variants of company names] in a database" – a word lexicon database 318 stores data structures of words to be recognized (column 9, line 59 to column 10, line 19: Figure 3); a speech recognition

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application recognizes company names (column 13, lines 36 to 43); thus, word lexicon database 318 stores company names;

“generating at least one word sequence hypothesis by a speech recognizer from a speech utterance consisting of one or more words” – a recognition component 312 recognizes individual subwords in the input speech; the recognition component 312 emits the selected most-likely word, phrase, or sentence on path 324 as a word/phrase/sentence hypothesis (column 9, lines 59 to 60; column 10, lines 10 to 12: Figure 3);

“finding entries in the database that are at least partially found in the word sequence hypothesis by comparing the word sequence hypothesis with the entries which represent company names stored in the database” – the recognition component 312 also has an associated word lexicon database 318 and a grammar database 320; the word lexicon database 318 represents a mapping between strings of subword sounds and vocabulary words, phrases, or sentences; the word lexicon database 318 contains a data structure describing the pronunciation, in terms of subword symbols, of each word in the system’s vocabulary; in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible

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names (column 13, lines 35 to 41); thus, word lexicon database 318 contains a list of company names for a company name recognition task;

“selecting a company name as a recognition result in dependence on the result of the comparison and probability of each entry” – in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, recognition component 312 selects a most-likely company name for a company name recognition task.

Concerning independent claim 8, *Sukkar* discloses most-likely words are recognized (column 10, lines 10 to 12), implying a company name is selected based upon “a first probability”, but omits storing variants of company names, and producing a first probability dependent upon a number of words in a word sequence, where each word has a weight factor. However, *Chao Chang et al.* teaches speech recognition of various subsets of words, where the various subsets of words are sent to a natural language interpreter. Specifically, subsets of words includes variants on a company name “IBM”, where variants include “international business machines incorporated” and “international business machines”. (Column 6, Line 60 to Column 7, Line 22)

Moreover, *Chao Chang et al.* teaches:

“producing a first probability for each entry found during the step of comparing, the probability being dependent on the number of words in each of the entries found in the word sequence hypothesis, wherein each word has a weight factor, particularly characteristic words having a large weight factor, the weight factor being taken into account in determining the probability for each entry” – word confidence scores (“a first probability for each entry”) are combined for all words a slot to form a slot confidence score; word confidence scores can be combined by forming a mathematical average of their respective values; certain words can be ascribed more importance (“a weight factor”) so that weighted averaging can be used; for “International Business Machines, all four words contribute to filling the company name slot, but only the first three are necessary words (column 6, lines 39 to column 7, line 22: Figure 1); the first three words are “particularly characteristic words having a large weight factor”; the probability is “dependent on the number of words” because a mathematical weighted average of all the words is determined. The objective is to process and interpret natural language in a manner that enhances operation through the use of semantic confidence values to enhance efficiency. (Column 1, Lines 20 to 27) It would have been obvious to one having ordinary skill in the art to not take into account certain words in a company name as taught by *Chao Chang et al.* in the speech recognition method and system of *Sukkar* for the purpose of enhancing operation through the use of semantic confidence values to increase efficiency.

Concerning claim 2, *Sukkar* discloses subword-level verification subcomponent 410 receives the input speech on path 322 and generates for each subword a subword verification score representing a determination of whether the speech segment associated with the subword contains the subword hypothesis emitted by the recognition component 324; the subword verification scores 426a-426z are determined as a ratio of the likelihood that the speech segment contains the sound associated with the subword hypothesis; combiner subcomponent 414 combines the subword verification scores to produce a word/phrase/sentence verification score ("a probability value") on path 428 for the speech unit (column 10, line 58 to column 11, line 12: Figure 4).

Concerning claim 3, *Sukkar* discloses a discriminative training procedure for subword-based verification training of subword models based upon correct and incorrect recognitions (column 12, lines 6 to 65: Figures 6a and 6b); training subword models based upon correct and incorrect recognitions is equivalent to "an adaptation of a speech model".

Concerning claim 4, *Sukkar* discloses assigning a likelihood to each subword hypothesis and combining subword scores (column 10, line 58 to column 11, line 12), but omits not taking into account certain words defined a priori during comparison to entries in a database of company names. However, *Chao Chang et al.* teaches natural language speech recognition, where certain words are ascribed more importance for a weighting average so as to distinguish between smaller subsets of crucial words identified as necessary words and words that merely fill a slot. In the example of a

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company name "International Business Machines Incorporated" only the first three words are necessary words. (Column 6, Line 50 to Column 7, Line 14) Thus, "Incorporated" is not a necessary word for "International Business Machines Incorporated", so it is "a priori not taken into account during comparison."

Concerning claim 5, *Sukkar* discloses a discriminative training procedure for subword-based verification training of subword models based upon correct and incorrect recognitions ("a speech model which was trained") (column 12, lines 6 to 65: Figures 6a and 6b); training is "with the aid of the information stored in the database" because "the database" can be defined to collectively include recognition-specific subword acoustic Hidden Markov Models (HMMs) 316, word lexicon database 318, and grammar database 320, and training at least utilizes recognition-specific subword acoustic Hidden Markov Models (HMMs) 316 (Figures 3 and 4).

Concerning claim 9, *Chao Chang et al.* teaches a mathematical weighted average of words in each slot ("a first probability value") (column 6, lines 39 to 59: Figure 1) and a word confidence score for each phone of each word in the slot with phone confidence scores to form the slot confidence value ("a second probability value being taken into account") (column 7, lines 15 to 22: Figure 1).

Response to Arguments

4. Applicant's arguments filed 29 December 2004 have been fully considered but they are not persuasive.

Firstly, Applicant states that replacement pages for the original drawings are attached for Figures 1 and 2. However, no replacement pages for the original drawings were found attached.

Secondly, Applicant argues that a combination of *Sukkar* and *Chao Chang et al.* would fail to suggest the limitations of independent claims 1 and 7, as amended. Applicant states that *Chao Chang et al.* recognizes stock names and determines that some of the words of a stock name are necessary and others are not necessary. Applicant maintains that *Chao Chang et al.* fails to teach or suggest “storing entries including company names and variants of said company names in a database, said variants including at least one of mix-ups of part of company names, colloquial formulations of company names, abbreviations of company names, and acronyms of company names”. This position is traversed.

Chao Chang et al. teaches speech recognition of various subsets of words, where the words are at least “mix-ups of part of said company names.” Specifically, subsets of words includes variants on a company name “IBM”, where variants include “international business machines incorporated” and “international business machines”. (Column 6, Line 60 to Column 7, Line 22) Variants for IBM of “international business machines incorporated” and “international business machines” include at least “mix-ups of part of company names”. As broadly construed, “mix-ups of part of company names” can include instances where a speaker omits one of the words comprising a company name. Thus, the combination of *Sukkar* and *Chao Chang et al.* suggests all the limitations of independent claims 1 and 7.

Thirdly, Applicant argues that a combination of *Sukkar* and *Chao Chang et al.* would fail to suggest the limitations of independent claim 8, as newly presented. Applicant says that *Sukkar* fails to assign weight factors to specific words in entries of a database, and that *Chao Chang et al.* also fails to teach this limitation. This position is traversed.

Chao Chang et al. teaches weighted averaging of words in a slot, where the weighted averaging is equivalent to the claimed weight factors assigned to specific words. Word confidence scores are combined for all words a slot to form a slot confidence score, where word confidence scores can be combined by forming a mathematical average of their respective values. Certain words can be ascribed more importance so that weighted averaging can be used. For "International Business Machines, all four words contribute to filling the company name slot, but only the first three are necessary words. (Column 6, Lines 39 to Column 7, Line 22: Figure 1) The first three words are "particularly characteristic words having a large weight factor". The probability is "dependent on the number of words" because a mathematical weighted average of all the words is determined. Thus, a combination of *Sukkar* and *Chao Chang et al.* suggests all the limitations of newly-presented independent claim 8.

Therefore, the rejection of claims 1 to 5 and 7 to 9 under 35 U.S.C. 103(a) as being unpatentable over *Sukkar* in view of *Chao Chang et al.* is proper.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Gupta et al. ('107), de Hita et al., Podhradsky, and Vernau et al. disclose related art.

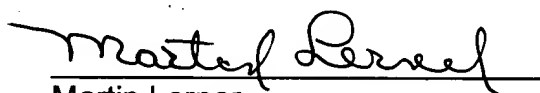
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
4/19/05

A handwritten signature in black ink, appearing to read "Martin Lerner", written over a horizontal line.

Martin Lerner
Examiner
Group Art Unit 2654